Science Standards of Learning

Sample Scope & Sequence

Earth Science

Commonwealth of Virginia
Department of Education
Richmond, Virginia
2003

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Preface

As an additional resource to help school divisions develop curricula aligned to the 2003 Standards of Learning, the Virginia Department of Education has developed sample scope and sequence documents for kindergarten through grade eight and for core high school courses. These sample documents provide guidance on how the essential knowledge, skills, and processes that are identified in the Standards of Learning and the Standards of Learning Curriculum Frameworks may be introduced to students in a logical, sequential, and meaningful manner.

These sample scope and sequence documents are intended to serve as general guides to help teachers and curriculum developers align their curricula and instruction to support the Standards of Learning. Each sample document is organized around specific topics to help teachers present information in an organized, articulated manner. Also included are correlations to the Standards of Learning for that curricular area for a particular grade level or course, as well as ideas for classroom assessments and teaching resources.

The sample scope and sequence documents are not intended to prescribe how curriculum should be developed or how instruction should be delivered. Instead, they provide examples showing how teachers and school divisions might present to students in a logical and effective manner information that has been aligned with the Standards of Learning. School divisions that need assistance in developing curricula aligned with the Standards of Learning are encouraged to consider the sample scope and sequence guides. Teachers who use the documents should correlate the content identified in the guides with available instructional resources and develop lesson plans to support instruction.

The *Science Standards of Learning Sample Scope and Sequence* and the *Science Standards of Learning Curriculum Framework* can be found in both PDF and Microsoft Word file formats on the Virginia Department of Education's Web site at http://www.doe.virginia.gov/VDOE/Instruction/sol.html.

Introduction

Earth Science should be investigative and continually involve students in the scientific process. Students should be given numerous opportunities to evaluate and analyze data, both data they have collected and that of others. The Standards of Learning processes delineated in ES.1 and ES.2 are referenced numerous times in this sample scope and sequence. The classroom teacher is encouraged to incorporate them into many other parts of the curriculum as well.

This document is intended as a general guide to help teachers and schools frame a curriculum that incorporates the fundamentals of secondary science courses and to provide a correlation of those fundamentals to the Virginia Standards of Learning. It is organized around specific topics and includes correlations to the Science Standards of Learning, as well as ideas for assessments and resources. This document is not intended as a script for either curriculum developers or instruction, but it will provide teachers and curriculum developers a place to begin building a curriculum.

Organizing Topics	Related Standards of Learning
Map Skills	**ES.1 c, d; ES.3 a, b, c, d**
Minerals and Rocks	**ES.1 a, b, c; ES.5 a, b; ES.6 a, b, c; ES.9.a, b**
Plate Tectonics	**ES.1 b, c; ES.2 a, b, c; ES.8 a, b, c;**
Shaping Earth's Surface	**ES.1 b, c, d; ES.2 b, d, e; ES.7 d, e; ES.8 a, b, c; ES.9 c, d, e; ES.10 a, b, c, d; ES.11 a, b, c, d, e**
Investigating Earth's History	**ES.2 b, d, e; ES.10 a, b, c, d**
Oceanography	**ES.8 a, b, c; ES.11 a, b, c, d, e**
Meteorology	**ES.1 a, b; ES.7.d; ES.12 a, b, c, d, e; ES.13 a, b, c, d**
Astronomy	**ES.1 c, e; ES.2 a, b, c, d; ES.4 c; ES.14 a, b, c, d, e**
Natural Resources	**ES.7 a, b, c, d, e; ES.11a**

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Map Skills	**Students should be able to:**		Lab practical Student generated maps Student lab report on field exercise Quizzes Unit tests	(See page 26 for Resources information.) *Science Standards of Learning Curriculum Framework* Topographic Maps Textbook SOL Test Blueprints and SOL Released Tests
	Compare topographic maps of different scales.	ES.1 c, d ES.3 a, b, c, d		
	Read and interpret maps, including legends and lines (e.g., contour and isobar) used on maps.	ES.1 c, d ES.3 a, b, c, d		
	Locate points and directions on maps and globes using latitude and longitude.	ES.1 c, d ES.3 a, b, c, d		
	Construct profiles from topographic contours.	ES.1 c, d ES.3 a, b, c, d		
	Determine distance and elevation on a map.	ES.1 c, d ES.3 a, b, c, d		
	Identify a hilltop, stream, and valley on a topographic map.	ES.1 c, d ES.3 a, b, c, d		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Minerals and Rocks	**Students should be able to:**		Lab practical on local rocks Student collected rock and mineral sets Student presentations Quizzes Unit tests	(See page 26 for Resources information.) *Science Standards of Learning Curriculum Framework* Virginia Geology CD-ROM series *Virginia Earth Science Resource Page* Web site *Exploring Earth Science in the Shenandoah National Park* *Images* of Virginia's Geology CD-ROM Rock and mineral sets Textbook Teaching Science SOL Test Blueprints and Released Tests
	Distinguish between rocks and minerals, and understand that most rocks are composed of minerals.	ES.5 a ES.1 a, b		
	Characterize a mineral as being a naturally occurring, inorganic, solid substance with a definite chemical composition and structure.	ES.5 a		
	Examine the important physical properties of minerals (color, streak, luster, hardness) and classify minerals.	ES.5 a		
	Examine and identify important rock-forming minerals, including but not limited to quartz, feldspar, calcite, and mica.	ES.5 a, b		
	Identify important ore minerals, including but not limited to pyrite, magnetite, hematite, galena, halite, graphite, and sulfur.	ES.5 a, b		
	Describe the change that occurs to each type of rock throughout the rock cycle. Interpret the rock cycle diagram.	ES.6 a, b, c		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Minerals and Rocks (continued)	Identify the following types of rocks based on mineral content and texture: • Igneous rock forms from molten rock that cools and hardens either below or on the Earth's surface. • Extrusive igneous rocks have small crystals and a fine-grained texture. • Intrusive igneous rocks have larger crystals and a coarse-grained texture. • Extrusive igneous rocks include pumice, obsidian, and basalt. • Intrusive igneous rocks include granite. • Sedimentary rocks form from rock fragments or organic matters bound together, or are formed by chemical precipitation. • Clastic sedimentary rocks are made up of fragments of other rocks and include sandstone, conglomerate, and shale. • Non-clastic sedimentary rocks include limestone and gypsum. • Metamorphic rocks form by the effects of heat, pressure, or chemical action on other rocks. • Metamorphic rocks can be foliated or nonfoliated (unfoliated).	ES.6 a, b, c		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Minerals and Rocks (continued)	(continued) • Foliated metamorphic rocks, such as slate, schist, and gneiss, whose mineral grains flatten and line up in parallel layers or bands. • Nonfoliated (unfoliated) metamorphic rocks have few or no layers and include marble and quartzite. Classify the following rocks as igneous, metamorphic, or sedimentary: pumice, obsidian, basalt, granite, sandstone, conglomerate, shale, limestone, gypsum, slate, schist, gneiss, marble, and quartzite.	ES.6 a, b, c		
	Identify soil as loose rock fragments and clay derived from weathered rock mixed with organic materials.	ES.9 a, b		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Plate Tectonics	**Students should be able to:**		Lab practical Student presentations Student modeling Quizzes Unit tests	(See page 26 for Resources information.) *Science Standards of Learning Curriculum Framework* Virginia Geology CD-ROM series U.S. Geological Society Web site VAST Web site Textbook SOL Test Blueprints and Released Tests
	Create a model of Earth's structure as a solid, mostly iron inner core; a liquid, mostly iron outer core; a rocky, plastic mantle; and a rocky, brittle crust.	ES.8		
	Describe the forces that provide evidence that the core, mantle, and crust of the Earth are a dynamic system, which is constantly in motion.	ES.8 b, c		
	Understand that the lithosphere is the solid outer shell of Earth that is divided into plates that are in motion with respect to one another.	ES.8 b		
	Design an investigation to explain the concept of convection and apply it to various plate motions.	ES.8 b, c		
	Differentiate between the properties of oceanic and continental crust.	ES.8 b, c		
	Using physical models and explanation of major features, differentiate among the types of relative plate motions and boundaries, including convergent, divergent, and transform.	ES.8 b, c		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Plate Tectonics (continued)	Describe the relationship among convection, plate motion, and associated geologic activity (e.g., earthquakes, volcanoes, and mountain building).	ES.8.a, b, c ES.1 b, e		
	Predict that geologic activity (e.g., earthquakes, volcanoes, and mountain building) occurs as a result of relative motion along plate boundaries.	ES.8 a, b, c ES.1 b ES.2 a, b, e		
	Create a diagram illustrating the relationship between convection in the mantle and hot spot activity.	ES.8.b		
	Recognize that • a fault is a fracture in Earth's crust along which movement has occurred; • most active faults are located at or near plate boundaries. Earthquakes result when movement occurs along a fault; • when rocks are compressed horizontally, their layers may be deformed into wave-like forms called folds. This commonly occurs during continental plate collisions. Generalize that a volcano is an opening where magma is extruded onto the Earth's surface. Most volcanic activity is associated with subduction, rifting, or sea-floor spreading.	ES.8 b, c		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Plate Tectonics (continued)	Infer how the five physiographic provinces in Virginia were produced by a billion-year long tectonic and geologic history by interpreting geologic cross sections of the state, presence of rock types, absolute and negative ages, and geologic structural features. Label a map of the physiographic provinces and describe the characteristics of each province in terms of rock type, structure, topography, and age.	ES.8 a		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Shaping Earth's Surface	**Students should be able to:**		Lab practical Student presentations using Virginia geologic maps Quizzes Unit tests	(See page 26 for Resources information.) *Science Standards of Learning Curriculum Framework* Cross sectional maps of Virginia geological history Project Underground SOL Test Blueprints and Released Tests Textbook
	Interpret a groundwater diagram showing the zone of aeration, the zone of saturation, the water table, and an aquifer.	ES.9 c, d, e		
	Interpret a hydrologic cycle diagram, including evaporation, condensation, precipitation, and runoff.	ES.9 c, d, e		
	Apply the following major concepts regarding freshwater as to current and future water usage and availability: • A substantial amount of water is stored in permeable soil and rock underground. • The Earth's fresh water supply is finite. • Water is continuously being passed through the hydrologic cycle. • Fresh water is necessary for survival and most human activities.	ES.9 c, d, e		
	Develop an investigation to determine the difference between permeable and impermeable materials.	ES.9 c, d, e ES.1 d		
	Identify examples of weathering (the process by which rocks are broken down by the action of water, air, and organisms) -both mechanical and chemical-and its by-products including sediments and soil and its products.	ES.8 b ES.7 d, e		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Shaping Earth's Surface (continued)	Explain how geological processes such as erosion, and human activities such as waste disposal, can pollute water supplies.	ES.8 b ES.9 e		
	Define deposition as the process by which Earth materials carried by wind, water, or ice settle out and are deposited.	ES.8 b ES.1 c, d		
	Define erosion as the process by which Earth materials are worn away by moving water, ice, or wind and provide examples of erosion.	ES.8 b		
	Recognize that karst topography • includes features like caves and sinkholes; • forms when limestone at or near the surface is slowly dissolved away by slightly acidic groundwater; • is common where limestone is abundant in the Valley and Ridge Province of Virginia.	ES.9 a, b		
	Review the landscape of the five physiographic provinces of Virginia.	ES.8 a		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Investigating Earth's History	**Students should be able to:**		Lab practical Quizzes Unit tests	(See page 26 for Resources information.) *Science Standards of Learning Curriculum Framework* Textbook SOL Test Blueprints and Released Tests
	Define fossil as the remains, impressions, or other evidence of the former existence of life preserved in rock (mostly sedimentary) and list the ways fossils can be preserved.	ES.10 a, d		
	Determine which Virginia provinces contain the most fossils and provide an explanation for the abundance of fossils in these provinces.	ES.10 a, d		
	Provide evidence to support the following statement "Most Virginia fossils are of marine organisms thus indicating that large areas of the state have been periodically covered by seawater."	ES.10 a, b, d		
	Recognize that Paleozoic, Mesozoic, and Cenozoic fossils are found in Virginia.	ES.10 a, b, c, d		
	Describe how the following methods used to determine the history of Earth and the age of rocks differ: • Relative time places events in a sequence without assigning any numerical ages. • Fossils, superposition, and cross-cutting relations are used to determine the relative ages of rocks.	ES.2 b, d, e ES.10 b, c		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Investigating Earth's History (continued)	(continued) • Absolute time places numerical age on an event. • Radioactive decay is used to determine the absolute age of rocks.	ES.2 b, d, e ES.10 b, c		
	Describe how life has changed and become more complex over geologic time.	ES.10 a, d ES.2 b, d, e		
	Analyze a geologic cross section using superposition and cross-cutting relations to determine relative ages of rock bodies and geologic events.	ES.10 a, b, d		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Oceanography	**Students should be able to:**		Lab practical on density of fresh/sea water Quizzes Unit tests	(See page 26 for Resources information.) *Science Standards of Learning Curriculum Framework* Chesapeake Bay Foundation Web sites: The Bridge (VIMS), Chesapeake Bay Program, NOAA Textbook SOL Test Blueprints and Released Tests
	Identify and examine the physical and chemical changes within an ocean environment and explain the factors that influence the changes.	ES.11 a, b		
	Identify the finite resources of the ocean and analyze current resource management practices.	ES.11 b		
	Summarize how tides occur.	ES.11 a		
	Examine the relationship between changes in the sea level and ice caps.	ES.11 a ES.1 a, b		
	Define *estuary*, using the Chesapeake Bay as an example.	ES.11 a		
	Explain that • upwellings bring cold, nutrient-rich water from the deep ocean to the surface and are areas of rich biological activity; • there are large current systems in the oceans that carry warm water towards the poles and cold water towards the equator; • some ocean currents are convection currents.	ES.11 a ES.8 c		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Oceanography (continued)	Recognize the variability of sea floor topography, and its relationship to plate tectonics.	ES.11 a ES.8 c		
	Relate certain seafloor features such as mid-ocean ridges and trenches to plate tectonic processes.			
	Identify and classify the major topographic features including continental margins, trenches, mid-ocean ridges, and abyssal plains.	ES.11 c, d		
	Recognize that algae in the oceans are an important source of atmospheric oxygen.	ES.11 b, e		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Meteorology	**Students should be able to:**		Lab practical Quizzes Unit tests	(See page 26 for Resources information.) *Science Standards of Learning Curriculum Framework* *Virginia Earth Science Resource Page* Web site NOAA Web site Textbook SOL Test Blueprints and Released Tests
	Recognize that the ability of Earth's atmosphere to absorb and retain heat is affected by the presence of gases like water vapor and carbon dioxide.	ES.12 d, e		
	Explain how volcanic activity or meteor impacts could affect the atmosphere and life on Earth.	ES.12 d, e		
	Describe Earth's atmosphere as unique in that it contains substantial oxygen (21 percent) and 78 percent nitrogen and 1 percent trace gases.	ES.12 c		
	Recognize that the composition of Earth's atmosphere has changed over geologic time, and recognize specifically that • the early atmosphere contained little oxygen and more carbon dioxide than the modern atmosphere; • early photosynthetic life (algae and blue-green algae) generated oxygen as a byproduct and consumed carbon dioxide; • it was only after early photosynthetic life generated oxygen that animal life became possible.	ES.12 a, b		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Meteorology (continued)	Explain the major concepts of convection: • It is a current that is set up when hot, less dense material rises, cools, becomes denser, and sinks. • It is the major mechanism of energy transfer in the oceans, atmosphere, and Earth's interior. • Uneven heating of Earth by the Sun creates convection in the atmosphere, a major cause of weather.	ES.12 d ES.8 c ES.1 a, b		
	Distinguish between weather and climate.	ES.13 a, b, c		
	Identify the four major factors affecting climate including latitude, elevation, proximity to bodies of water, and position relative to mountains.	ES.13 a, b, c, d		
	Explain the following concepts related to energy transfer: • The Earth's surface is much more efficiently heated by the sun than is the atmosphere. • Energy transfer between the Earth's surface and the atmosphere influences weather. • The stored heat in the ocean drives much of the Earth's weather.	ES.13 a, b, c ES.11 c, d		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Meteorology (continued)	(continued) • Winds are created by uneven heat distribution at the Earth's surface and modified by the rotation of the Earth. • The stored heat in the ocean causes climate near the ocean to be milder than climate in the interior of continents.	ES.13 a, b, c ES.11 c, d		
	Compare and contrast catastrophic weather (e.g., tornadoes, hurricanes).	ES.13 c		
	Explain the Coriolis effect and how it helps create the global wind pattern. Illustrate how Earth's position in space determines that • the amount of energy reaching any given point on the Earth's surface is controlled by the angle of sunlight striking the surface and varies with Earth's revolution around the Sun (the seasons); • areas near the equator receive more of the sun's energy per unit area than areas nearer the poles.	ES.13 a, b, c		
	Identify the conditions necessary for cloud formation and how precipitation forms.			

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Meteorology (continued)	Label a diagram of global wind patterns. Read and interpret data from a thermometer, a barometer, and a psychrometer. Read and interpret weather maps. Identify cirrus, cumulus, and stratus clouds.	ES.13 a, b, c, d		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Astronomy	**Students should be able to:**		Lab practical on interpreting Hertzsprung-Russell Diagram Student generated scale models on planetary size and distance Quizzes Unit tests	(See page 26 for Resources information.) *Science Standards of Learning Curriculum Framework* *Virginia Earth Science Resource Page* Web site Textbook SOL Test Blueprints and Released Tests
	Recognize that the Big Bang Theory states that the universe began as a dense sphere that expanded and eventually condensed into galaxies.	ES.14 e ES.1e		
	Recognize that the solar nebular theory explains that the planets formed through condensing of the solar nebula.	ES.14 e ES.2 a, b, c, d		
	Discuss the evidence for the origin of the universe and origin of the solar system respectively.	ES.14 a ES.2 a, b, c, d		
	Understand that • stars have a finite lifetime and evolve over time; • the mass of a star controls its evolution, length of its lifetime, and ultimate fate, as shown by the Hertsprung-Russell diagram; • stars form by condensation of interstellar gas; • galaxies are collections of large numbers (billions) of stars.	ES.14 b, c		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Astronomy (continued)	Identify the basic types of galaxies as spiral, elliptical, and irregular.	ES.14 d		
	Define a light year as the distance light travels in one year. It is the most commonly used measurement for distance in astronomy.	ES.14 b		
	Identify and classify the following celestial bodies in the Milky Way Galaxy (sun, planets and their moons, comets, meteors, and asteroids).	ES.14 a, b, c, d, e ES.4 a, c		
	Describe the sun as a star that consists largely of hydrogen gas. Its energy comes from nuclear fusion of hydrogen to helium.	ES.14 b, c		
	Recognize that • the Earth is the third planet from the sun; • the four inner (terrestrial) planets consist mostly of solid rock; • four of the outer planets are gas giants, consisting of thick outer layers of gaseous materials, perhaps with a small rocky core; • the fifth outer planet, Pluto, has an unknown composition, and appears solid.	ES.14 a ES.4 c		
	Draw a diagram of the solar system and label the planets.	ES.4 c, d		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Astronomy (continued)	Name the characteristics of celestial bodies: • Moons are natural satellites of planets that vary widely in composition. • Comets orbit the sun and consist mostly of frozen gases. • Asteroids are rocky or metallic iron objects ranging in size from millimeters to kilometers. They are the source of most meteorites.	ES.4 c, d		
	Recognize the following ways the Earth's atmosphere has changed due to human, biologic, or geological activity: • Human activities have increased the carbon dioxide content of the atmosphere. • Man-made chemicals have decreased the ozone concentration in the upper atmosphere. • Volcanic activity and meteorite impacts can inject large quantities of dust and gases into the atmosphere.	ES.12 d, e		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Astronomy (continued)	Compare the Earth's atmosphere to that of • the atmosphere of Venus, which is mostly carbon dioxide and very dense; • the atmosphere of Mars, which is very thin and mostly carbon dioxide.	ES.4 c		
	Relate that much of our knowledge about the solar system is a result of space exploration efforts. These efforts continue to improve our understanding of the solar system.	ES.4 d		
	Summarize important space research information, including • much of our information about our galaxy and the universe comes from ground-based observations as well as information derived from utilizing the electromagnetic spectrum; • the Hubble Space telescope has greatly improved our understanding of the universe; • Apollo 11 was the first manned landing on the moon.	ES.4 d		

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Natural Resources	**Students should be able to:**		Student presentations and debates Quizzes Unit tests	(See page 26 for Resources information.) *Science Standards of Learning Curriculum Framework* Virginia Geology CD-ROM Series *Virginia Earth Science Resource Page* Web site American Geological Institute's Web Page Textbook SOL Test Blueprints and Released Tests
	Distinguish between renewable resources (e.g., sunlight, vegetation, surface water) and non-renewable resources (e.g., coal, oil, minerals).	ES.7 a, b, c		
	Recognize that modern living standards are supported by extensive use of both renewable and non-renewable resources and that fossil fuels are non-renewable and cause pollution, but are relatively cheap and easy to use.	ES.7 a, b, d, e ES.2 f		
	Identify major Virginia rock and mineral resources including but not limited to coal, gravel, limestone, and titanium.	ES.7 c		
	Recognize that estuaries like the Chesapeake Bay are resources with high biological activity.	ES.11 a ES.7 c		

Resources

American Geological Institute – http://www.agiweb.org

Chesapeake Bay Foundation – http://www.savethebay.cbf.org

Chesapeake Bay Program – http://www.chesapeakebay.net

Exploring Earth Science in Shenandoah National Park – 540-999-3489

National Oceanic and Atmospheric Administration (NOAA) – http://www.noaa.gov

Project Underground – e-mail (zokaites@usit.net)

Safety in Science Teaching manual – http://www.doe.virginia.gov/VDOE/Instruction/safetymanual.pdf

Science Standards of Learning Curriculum Framework – http://www.doe.virginia.gov/VDOE/Instruction/Science/sciCF.html

SOL Released Tests – http://www.doe.virginia.gov/VDOE/Assessment/releasedtests.html

SOL Test Blueprints – http://www.doe.virginia.gov/VDOE/Assessment/soltests/home.html

Topographic maps – Department of Mines, Minerals and Energy, Division of Mineral Resources - 804-951-6358

Virginia Association of Science Teachers Web site – http://www.VAST.org

Virginia Earth Science Resource Page – http://vtso.geol.vt.edu/vesr

Virginia Geology CD-ROM Series – Division of Mineral Resources - 804-951-6358

Virginia Institute for Marine Science – http://www.vims.edu

Other resources can be purchased from numerous vendors who sell science supplies and equipment. For further information, contact Eric M. Rhoades, secondary science specialist, at erhoades@mail.vak12ed.edu.